Calendar No. 133

101ST CONGRESS *1st Session*	SENATE	REPORT 101-59

ADVANCED SOLID ROCKET MOTOR PROGRAM

Mr. HOLLINGS, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

OF THE

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ON

S. 663

JUNE 22 (legislative day, JANUARY 3), 1989.—Ordered to be printed

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Mr. HOLLINGS, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

[To accompany S. 663]

The Committee on Commerce, Science, and Transportation to which was referred the bill (S. 663) to provide for additional contingent termination liability for the Advanced Solid Rocket Motor Program, having considered the same, reports favorably thereon with amendments and recommend that the bill do pass.

PURPOSE OF THE BILL

S. 663, as reported, permits the Administrator of the National Aeronautics and Space Administration (NASA) to provide for the payment for contingent liability in excess of appropriations for a new advanced solid rocket motor (ASRM) facility and its associated capital equipment in Yellow Creek, Mississippi. NASA requires this authority to sign a contract with the team of Lockheed/Aerojet to finance privately this new facility. This authority secures the contractor's investment in case the Government terminates the contract for its convenience.

BACKGROUND AND NEEDS

The Option of a Privately Financed Advanced Solid Rocket Motor

In the 100th Congress, the Committee spent a considerable amount of time reviewing the requirements for an ASRM for the space shuttle. Based on that review and the Committee's recommendations, the Congress instructed NASA in Public Law 100-147, the fiscal year (FY) 1988 NASA authorization bill, to issue a request for proposals (RFP) to acquire an ASRM by means of a competitive procurement. NASA also was instructed to consider ways

and means to improve quality control, reduce operational hazards, reduce costs, increase competition, and enhance manufacturing processes.

Pursuant to that legislative directive, NASA issued an RFP for an ASRM and productin facility on August 22, 1988. Pursuant to instructions from the Office of Management and Budget (OMB), NASA in the RFP required the prospective bidders to include proposals for a Governemnt-owned and company-operated facility on a Government site (GOCO) and a company-owned and company-operated facility on a Government site and to submit an optional proposal for a company-owned and company-operated facility on a private site. OMB was committed to the concept of commercialization and was determined to find alternative sources of financing for this facility.

The Committee had anticipated the likelihood of a private sector financing option being included in the RFP and had provided NASA with the necessary contingent liability authority to accommodate a privately financed facility in S. 2209, the FY 1989 NASA authorization bill. That authority also was contained in the Senate-passed version of S. 2209. However, during the House-Senate negotiations on the final FY 1989 NASA authorization bill, the Senate contingent liability language was deleted at the last minute at the insistence of the House. What remained of the original Senate language was section 207 of Public Law 100–685, the FY 1989 NASA authorization bill, which permited the Administrator of NASA to use the $27 milliion provided for in the "construction of facilities" account for a Government financed ASRM to be used for a privately financed production facility if the Administrator determined that it was in the best interests of the United States to select such a proposal.

The original contingent liability language was inserted in the Senate version of the FY 1989 NASA authorization bill to permit a fair assessment of the cost of a privately financed ASRM facility as compared with a traditional Government-financed facility. Many Members thought the GOCO option would be cheaper and hat NASA eventually would require "construction of facilities" funds for this project. However, the Committee was willing to assess the merits of alternative financing in light of the severe budget pressures facing NASA, the possibility of budget savings, and the assumpiton that this assessment would resolve once and for all the debate with OMB as to the cost advantages of private sector financing.

Prior to consideration of the FY 1989 NASA authorization bill and the proposed contingent liability provisions by the Senate in August, 1988, the Committee spent a considerable amount of time with the Senate Budget Committee discussing whether or not this provision was consistent with the Congressional Budget Act of 1974. To make sure this language was not a new form of back-door spending, the Chairman of the Senate Budget Committee and the Chairman of the Subcommittee on Science, Technology, and Space entered into a colloquy that described how this authority would work (See Congressional Record for August 9, 1988 at S11220).

As noted in that colloquy, NASA's liability was limited in amount to that provided in advance in appropriations Acts. This

meant that NASA only could be liable for the unobligated funds for this project and all other NASA activities as collateral in case the Government terminated the contract for its convenience. The amount of such funds, however, would be less than needed to accommodate any termination payments.

For this reason, it was clear that additional collateral had to be provided if the Federal Government expected the private sector to finance this or any other facility. While there are several ways for the Federal Government to put up collateral for this type of activity, such as the creation of an escrow account, the proposed contingent liability provisions were deemed to be an effective way to accomplish that collateral requirement. Absent such provisions, if for any reason the Government did terminate the ASRM project and NASA's unobligated funds were absorbed, it is probable that NASA would request an urgent supplemental to make whole the adversely affected programs.

The Specifics of a Private Financing Option

Pursuant to the RFP issued by NASA last August, two teams—Lockheed/Aerojet and Hercules/Atlantic Research—submitted bids for the ASRM contract including the facilities, tooling and equipment, and development and manufacturing of the new motor. Consistent with the RFP, both of these teams submitted financing proposals that included both a private and a Government financing scheme.

However, in January, the contractor teams and the involved congressional committees were informed that OMB had deleted the $68 million in "construction of facilities" funds for this program from the FY 1990 NASA Budget Request. According to OMB, the FY 1990 NASA budget could not accommodate the funds to permit the Federal Government to construct this project—private financing would have to be found if the project were to proceed. This meant that if Government financing were the preferred route, the Congress would be required to add construction of facilities funds to the budget or absorb the cost in the final NASA allocation, but neither of these options seems acceptable.

In light of this decision by OMB, NASA was now required to try to solicit a firm commitment from the involved congressional committees to give it the necessary legal authority to award a contract for a privately financed facility. In that regard, Dr. James C. Fletcher, then Administrator of NASA, submitted a legislative proposal to the Committee on February 15, 1989, that provided for contigent liability for a privately-owned and privately-financed ASRM facility. This proposal assumed that NASA would enter into a long-term lease or service agreement with the winning contractor team. No Member in the Senate introduced NASA's proposed contingent liability language.

NASA followed up that legislative request with a letter to the Committee on February 22, 1989, asking the Committee to comment on the proposed private financing initiatives included in the FY 1990 NASA Budget Request, including the ASRM proposal, within 30 days. Senators Hollings and Gore responded to that letter on March 10, 1989, and indicated that if the Committee were to consider such proposals, it would have to be convinced that (1)

the private sector was willing to make an equity investment and there was a net cost savings to the Federal Government, or (2) there was an overriding national interest.

The following is the exchange of correspondence on this matter:

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
Washington, DC, February 15, 1989.

Hon. ERNEST F. HOLLINGS,
Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: Submitted herewith is a draft bill, the "Advanced Solid Rocket Motor Contingent Liability Act." Section 2 of the bill would authorize NASA to provide contingent liability for the advanced solid rocket motor program in case the Government terminated the program. This program was authorized in the FY 1989 NASA Authorization Act (Public Law 100–685, Sec. 207).

The National Aeronautics and Space Administration recommends that the enclosed draft will be enacted. The Office of Management and Budget had advised that such enactment would be in accord with the program of the President.

Sincerely,

JAMES C. FLETCHER,
Administrator.

Enclosures.

A BILL

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

SECTION 1. This Act may be cited as the "Advanced Solid Rocket Motor Contingent Liability Act."

SEC. 2. If, pursuant to Section 207 of the National Aeronautics and Space Administration Authorization Act, Fiscal Year 1989 (Public Law 100–685) the Administrator selects a proposal for an Advanced Solid Rocket Motor (ASRM) offering a privately financed and nongovernment-owned production facility to be constructed on a government or nongovernment site, the Administrator is authorized, notwithstanding any provision of law to the contrary, to assume in such contract contingent liability in excess of available appropriations relating to the Government's potential termination for its convenience of such contract, if such contract limits the amount of the payments that the Federal Government is allowed to make under such contract to amounts to be provided in advance in appropriation Acts.

SECTIONAL ANALYSIS OF A BILL

Section 1

This section titles the bill the "Advanced Solid Rocket Motor Contingent Liability Act."

Section 2

Section 207 of the National Aeronautics and Space Administration Authorization Act of 1989 (Public Law 100–685, 102 Stat. 4083) provides that if, after evaluation of proposals received in response

to the request for proposals for an Advanced Solid Rocket Motor (ASRM) required by section 121(b) of the National Aeronautics and Space Administration Authorization Act of 1988 (Public Law 100-147, 101 Stat. 868), the Administrator determines that it is in the best interests of the United States to select a proposal offering a privately financed and nongovernment-owned production facility on a government or nongovernment site, funds shall be available for that purpose. However, in such event, NASA currently lacks the legal authority to assume contingent termination liability in the resultant contract in excess of available appropriations. This section gives NASA that authority.

The Senate-passed version of the ASRM authority in S. 2209 included an additional provision that would allow NASA to incur contingent liability in excess of available appropriations in the event that the Administrator selected an Advanced Solid Rocket Motor (ASRM) proposal offering a privately financed and nongovernment-owned ASRM production facility and the Government, thereafter, terminated the resultant contract for its convenience. This provision was not included in the House version of S. 2209 (Congressional Record of October 19, 1988, page H10389) nor was it included in S. 2209, as enacted.

However, it was recognized that a selection involving a privately financed and nongovernment-owned ASRM production facility would require legislation authorizing NASA to assume in the resultant contract, contingent liability in excess of available appropriations, but limited in amount to that provided in advance in appropriation acts, relating to the potential termination for convenience of such contract (Congressional Record of October 21, 1988, pages S17116 and S17117). Moreover, in a letter, dated October 20, 1988 to the Chairman, Committee on Commerce, Science and Transportation, United States Senate, the Administrator of NASA stated, in pertinent part, that he had "obtained assurances from the chairman of both of [NASA's] authorization committees that they would consider appropriate ASRM contingent liability legislation early in the 101st Congress" and, that, "it is programmatically necessary to obtain this legislation by early spring 1989 to enable [NASA] to support whatever award decision we make after completion of the ASRM evaluation and selection process." The provision added by this bill is that referred to in the Administrator's letter and will allow NASA to enter into an ASRM contract offering a privately financed and nongovernment-owned facility should the Source Selection Official determine that acceptance of such a proposal is in the best interests of the United States.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
Washington, DC, February 22, 1989.

Hon. ERNEST F. HOLLINGS,
Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: In support of the Administration's goals of increasing commercial participation in space activities, NASA's FY 1990 budget request proposes increased private sector investment and involvement in space, both with respect to planned space infra-

structure and in ground-based facilities. NASA is in the process of analyzing unique requirements for private financing of flight hardware elements, including the Flight Telerobotic Servicer and portions of extended-duration capability for the Space Shuttle, and will keep the Committee apprised of those efforts. The purpose of this letter is to address the efforts underway to provide for possible selection of a private investment option for the Advanced Solid Rocket Motor (ASRM) production and test facility and to explore the feasibility of private sector financing for three major ground facility projects newly proposed in the FY 1990 budget.

The Advanced Solid Rocket Motor contractor selection process is underway. This process will include evaluation of proposals for private investment in the production and test facility to be built at Yellow Creek, Mississippi, as well as proposals based on use of a government funded facility. The total estimated cost of the facility is $300 million of which the FY 1989 and 1990 increments are estimated at $27 million and $60 million respectively.

The new ground-based facilities for which private financing is being sought are listed below, along with the increment expected to be funded during FY 1990, and the total estimated costs.

	Millions
Construction of Space Station Processing Facility, Kennedy Space Center:	
Fiscal year 1990	$43
Total estimated cost	84
Construction of Neutral Buoyancy Laboratory, Johnson Space Center:	
Fiscal year 1990	30
Total estimated cost	30
Construction of Observational Instruments Laboratory, Jet Propulsion Laboratory:	
Fiscal year 1990	14
Total estimated cost	14

The individual projects are more fully described in an addendum to the President's budget request, which was submitted to the Congress on January 9, 1989.

NASA recognizes the importance of commercial investment and involvement in the construction and modification of ground-based facilities utilized in the United States civil space program. Because of the policy significance of these initiatives, as well as the criticality of the facilities to the accomplishment of NASA's principal missions, we wish to fully consult with the Committee while taking initial actions to formally seek private sector funding for the three new initiatives and as we approach contractor selection for the ASRM facility. If financed privately, the total cost of each facility would be completely or substantially amortized over an extended time through payment to the proposers. It also should be understood that, because these in-line facilities are critical requirements in direct support of NASA programs, they must be provided for, either through private financing or direct appropriations.

It is NASA's view that it is highly probable that private parties will provide financing for significant facility projects only if their investments in such projects are protected through Government assumption of contingent liability in the event they are terminated by the Government. Therefore, we feel that is is necessary for the success of major privately-financed facility projects that NASA be provided such authority. With respect to the ASRM Production and Test Facility, it is programmatically necessary, in my view, to have

legislation enacted in the near term which provdes NASA contingent liability authority so as to support whatever award is made following completion of the evaluation and selection process. Having such authority, or as a minimum a clear indication from the concerned Congressional Committees that such authority would be provided promptly if required to support the contractor selection, would ensure a "level playing field" during consideration of proposals, minimize the risk of any successful protest, and avoid a potential major program delay resulting from uncertainty of the Government commitment in the event that a decision is made to proceed with the ASRM program on a privately-financed facility basis. The Administration has recently proposed separate legislation to this effect for consideration by the Congress on an expedited basis, consistent with understandings reached last fall between NASA and the Chairmen of the House Committee on Science, Technology and Space and the Senate Committee on Commerce, Science and Transportation, respectively. The Administration's proposed FY 1990 NASA authorization bill also includes an amendment to the Space Act which would grant NASA legal authority to assume, in contracts, leases or agreements resulting from privately financed facility projects, contingent termination liability in excess of available appropriations. This proposed amendment would provide NASA the necessary authority to pursue, after appropriate Congressional notifications, private financing for newly proposed facility initiatives without requiring the Agency to obtain appropriations in advance to cover costs which would not be paid for several years.

Because extensive experience with private financing of such in-line project elements has not been accumulated, and because extended delays in the building of these program-critical facilities cannot be sustained, NASA is proceeding with intensive effort to establish a firm basis for implementing these initiatives. As an initial step, we have undertaken market surveys for potential interest in providing financing for the Space Station Processing Facility and the Neutral Buoyancy Laboratory, and will be analyzing the responses to those surveys very shortly. If sufficient interest is reflected in those responses, the next step would be to issue formal requests for proposals for these projects, and the observational Instruments Laboratory, with the specific provision that any eventual contract award may be subject to Congressional enactment of appropriate termination liability legislation.

We need to proceed as expeditiously as possible with necessary actions to ensure that funding of these critical in-line facilities is secured during the consideration of the FY 1990 budget request. Your advice as to the Committee's preliminary views of these initiatives, your plan for Committee deliberations on these proposals, and requirements for specific information from NASA to support those deliberations, would be extremely useful to NASA. It would be highly desirable to receive such views within the next month to allow NASA sufficient time to evaluate alternative approaches for

these projects, if necessary. NASA stands ready for further discussion, as required.

Sincerely,

JAMES C. FLETCHER,
Administrator.

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC, March 10, 1989.

Dr. JAMES C. FLETCHER,
Administrator, National Aeronautics and Space Administration, Washington, DC.

DEAR DR. FLETCHER: We would like to respond to your February 22 letter concerning the Administration's goal of increasing commercial participation in space activities.

First, let us indicate that promoting commercial space activities is not solely the goal of the Administration. This Committee and the Congress have spent a great deal of time reviewing this concept and trying to come to grips with the appropriate federal role.

You might recall that it was this Committee that first recommended NASA establish a high level office for commercial space activities; it was this Committee that provided the enabling authority for the privatization of the federal land remote sensing satellite system; it was this Committee that created the regulatory and indemnification regime for commercial expendable launch vehicles; and it was this Committee that called for a thorough analysis of the Commercially Developed Space Facility proposal prior to any commitment of federal funds for this activity.

This Committee also has worked closely with NASA and the Administration on a variety of other initiatives that are of critical importance to a commercial space regime: space shuttle pricing policy, range use agreements, joint endeavor agreements, modified launch services agreements, memoranda of understanding with universities and commercial vendors, termination liability for commercial launch services, and development and funding for Centers for the Commercial Development of Space.

Despite constant criticism from many quarters of this Administration that not enough is being done by the Congress to stimulate commercial space activities, this Committee feels that there is a commitment to commercial space activities. What is lacking are a clear definition of the concept of "commercial space activities" and a clearly defined policy that outlines the federal role in this endeavor.

Since 1982, when the Reagan Administration started to promote commercial space activities, this Committee has seen the concept change from commercialization (provision of space hardware and services by commercial vendors to commercial customers), to privatization (transfer of operation of existing federal systems to the private sector), back to a new concept of commercialization (provision of space hardware and services by commercial vendors to the federal government). This Committee has seen the Reagan Administration renege on the contract to privatize Landsat, oppose a risk

sharing/indemnification regime for commercial expendable launch vehicles, and delete funding each year for the Advanced Communications Technology Satellite. Since 1982, the Administration's commercial space policy has been driven by ideology and budget gimmicks and has resulted in a loss of market share for the U.S. in space transportation, remote sensing, and communications.

This Committee believes that this approach must end. If the U.S. wants to retain and gain market shares in commercial space activities, there must be a reliable partnership between the federal government and the industry/university sectors, as well as clearly defined goals and policies.

Second, a commercial space policy must be driven by a reasonable set of expectations and based on detailed analysis.

This year's NASA Budget Request deleted funds for seven different facilities and hardware projects based on the assumption of private sector financing. With the exception of the proposed ASRM facility that we will address later, this Committee was never consulted on any of these six projects until the FY 1990 NASA Budget Request was submitted. Yet, this Committee is being asked to provide its position on these six proposed activities within 30 days, despite the fact that no formal legislative proposal has even been submitted to the Committee.

The Committee staff has met with OMB and NASA to discuss these six proposals and the ASRM proposal, and the Committee did have the Congressional Budget Office (CBO) prepare an advisory opinion on the concept of third party financing. However, based on the Committee's review of the CBO memorandum, it would be hard pressed to give a general endorsement to these six proposals since this report raised several significant budgetary and policy questions. The Committee, therefore, intends to explore further these matters and to conduct a hearing on these proposals and other relevant matters in late April or early May.

The Committee, at this time is unable to provide its view on private sector financing of the space station facilities, neutral buoyancy tank, observational instruments lab, flight telerobotic services, extended duration orbiter, or space station docking module.

However, if the Committee is to consider these proposals, it would have to be convinced (1) the private sector were willing to make an equity investment and there was a net cost savings to the federal government or (2) there was an overriding national interest.

Third, the Committee would like to respond to your inquiry concerning the Advanced Solid Rocket Motor language that you submitted formally to the Committee on February 15, 1989.

Last Fall, during consideration of the FY 1989 NASA Authorization Bill, Senator Hollings, Chairman of this Committee, and Senator Heflin were engaged in serious negotiations with you and OMB over the need for the Senate-passed contingent liability language to accommodate the ASRM private sector financing options. As a result of those negotiations, the Senate concluded, as did OMB, that the language contained in Sec. 207 of Public Law 100-685 allowed NASA to accept bids for a privately-financed and non-government owned facility, to select a privately-financed and non-government owned facility, and to award a contract for a privately-fi-

nanced and non-government owned facility since Public Law 100-685 provides up to $27 million in FY 1989 for contingent liability for a privately financed ASRM option. That position is clearly stated in the legislative history surrounding this question, which can be found in the Congressional Record for October 21, 1988, on pages S17114-S17118.

During floor consideration of Public Law 100-685, clear assurances were given that the Congress would act in an expeditious manner to provide additional contingent liability authority if a privately financed and non-government owned facility were selected and additional contingent liability authority were required. You reference this guarantee in your letter of October 20, 1988, to Chairman Hollings. The same letter also notes that (1) passage of Public Law 100-685 would not prevent NASA from conducting a fair and open ASRM competition which would consider both privately and publicly financed facilities and (2) additional legislative authority could be required to support whatever award decision you make after completion of the ASRM evaluation and selection process.

Simply put, the Committee's position in February, 1989, is the same as it was in October, 1988. The Committee strongly endorses the ASRM program, and it is our intent to provide the necessary funds and/or legal authority to implement this program in a timely manner. Therefore, we look forward to meeting with you or your representatives as soon as an ASRM selection is made to determine what actions will be required by the Committee.

Finally, the Committee would like to reiterate a point that seems to get lost in discussions of the different ASRM financing options. The Committee's support for the ASRM program stems from the Committee's belief that the ASRM will result in a safer and more reliable space transportation system. The Committee did not initiate this project to stimulate private sector financing. It initiated the ASRM program to reduce the risks associated with space flight, to regain lost space shuttle capacity, and to improve substantially the manufacturing process for solid rocket motors. This is a critical fact that cannot be overlooked in these discussions.

Sincerely,

ALBERT GORE, Jr.,
Chairman, Subcommittee on Science, Technology, and Space.

ERNEST F. HOLLINGS,
Chairman, Committee on Commerce, Science, and Transportation.

As noted in the Hollings/Gore letter, the Committee also was concerned that OMB had shifted the emphasis in evaluating the ASRM program from enhanced flight safety and reliability to private sector financing. Although it did not state it in the letter, the Committee also was concerned that the deletion of the FY 1990 "construction of facilities" funds for this activity could have negated a fair cost comparison between the assessment of Federal financing and private sector financing.

The Proposed Financing Scheme

On April 21, 1989, NASA announced that the team of Lockheed/Aerojet had won the ASRM contract competition and that they had proposed a private financing option that would result in significant cost savings in terms of the net present value of the financing scheme. Since the contractor selection announcement was made, the Committee has been seeking to understand in more detail the proposed financing scheme and the technical design of the proposed ASRM.

Since NASA and the contractor team of Lockheed/Aerojet are just starting negotiations, none of the actual numbers presented in the bid can be used to perform this analysis. The Committee, therefore, has been required to utilize the Space Shuttle Advanced Solid Rocket Motor Acquisition Plan of March 1988 estimates as the bases of its analysis. This plan assumed that the ASRM facility would cost $300 million and the associated capital equipment would cost $227 million. The necessary technical information has been supplied to the Committee.

Specifically, based on the Committee's review of the Lockheed/Aerojet proposal with NASA, the following are details about the proposed financing scheme that can be provided without jeopardizing the current negotiating process. In this regard, the estimates presented herein are those assumed in the Space Shuttle Advanced Solid Rocket Motor Acquisition Plan of March 1988. These estimates may or may not represent the levels agreed upon in the final contract. However, they do permit a reasonable baseline for performing a cost estimate and for determining the proposed funding schedule. The details of the proposal are as follows:

1. Private sector financing will be at a variable interest rate not more than 90–100 basis points above the London Interbank Offer Rate.

2. The variable interest loan rate will be readjusted every six months and borrowing only will occur when funds are needed—the full cost of the project will not be borrowed up front.

3. The lender will defer the principal payment for 2½ to 3 years, but NASA will be required to make interest payments starting in FY 1989.

4. Each increment of the loan is to be repaid in five years commencing immediately after the three-year grace period on the principal (final payment on each increment is made eight years after that portion of the loan is initiated).

5. NASA will immediately take title to the ASRM facility as it is contructed—this is not a lease agreement or a service contract.

6. The estimated value of the privately financed portion of the program is approximately $530 million. This figure includes $300 million for the facility and $230 million for the capital equipment—as noted above, these are estimates based on the Space Shuttle Advanced Rocket Motor Acquisition Plan of March 1988.

The Committee instructs NASA to provide the Senate Committee on Commerce, Science, and Transportation and the House Commit-

tee on Science, Space, and Technology with a report within 30 days of the signing of the final contract with the Lockheed/Aerojet team that includes the following:

1. an outline of the major provisions of the contractual agreement's financing plan;
2. the proposed funding profile for the program and facilities; and
3. a year-by-year breakdown of the Federal Government's contingent liability exposure pursuant to the terms of the agreement.

Cost to Government of Proposed Private Financing Scheme

Based on the analysis performed by NASA, table I below depicts the Government expenditures for the facility and capital equipment in real year dollars. As can be seen from table I, the Government funding option require heavier payments up front, while the private financing option permits the deferral of the facilities costs to the later years because of the deferred principal component of the Lockheed/Aerojet proposal.

TABLE I.—FACILITIES EXPENDITURES

[Real-year dollars in millions]

	Fiscal year—								Total
	1989	1990	1991	1992	1993	1994	1995	1996	
Government funding facility	45	130	155	130	70				530
Private financing (typical) facility	1	11	5	141	140	133	123	112	[1] 686

[1] Assumes an interest rate of 10 percent.

It should be noted that consistent with Federal pricing practices, table I does not assume any interest cost for borrowing for the Federal Government. However, it does assume that the private financing plan would include an interest cost of $130 to $190 million as a result of the variable interest rate loan. As can be seen in table II below, the total cost in real-year dollars of the private financing of the ASRM production facility and capital equipment is sensitive to interest rates and increases $15 to $16 million for every one percent increase in interest rate.

TABLE II.—SENSITIVITY TO INTEREST RATE FLUCTUATIONS

Interest rate	Total interest	Principal	Total
Percent:			
8.0	$127	$527	$654
8.0	137	527	664
9.0	143	527	670
10.0	159	527	686
11.0	175	527	702
12.0	191	527	718
13.0	207	527	734
14.0	223	527	750
15.0	238	527	765
16.0	254	527	781

The analysis in tables I and II was performed on the basis of the costs of private and Government financing in terms of real year dollars. However an alternative means for assessing the relative value of private financing and Government financing is to examine costs by looking at their Net Present Value (NPV).

The NPV analysis technique is commonly adopted by the General Accounting Office (GAO) and OMB and used widely in industry. NPV analysis takes into account the time value of money which means simply that a dollar invested today at a certain interest rate is worth more than a dollar in the future. Conversely, a dollar in the future is the equivalent of less than a dollar today. Future dollars must therefore be "discounted" back, pursuasnt to an established formula, to today's terms to yield an equivalent amount in today's dollars—i.e., the present value. If future dollars are discounted back to present values and added together, the NPV of the project can be determined. To the Government, the project with the lowest NPV cost is usually the most desirable.

Because an NPV analysis reflects economic realities better than focusing on real dollars, the Committee had NASA perform NPV analysis of a proposal that was consistent with the NASA Space Shuttle Advanced Solid Rocket Motor Acquisition Plan total cost assumption of $530 million. The analysis was performed using an interest rate assumption of 10 percent and a discount rate assumption of 9.1 percent.

Pursuant to the NPV methology outlined in OMB Circular A-104, table III below was formulated. As can be seen in table III, the life cycle costs of a Government financed facility are less than the life cycle cost of a privately financed facility using current interest and discount rates. Table III also indicates that the NPV of the facility-only portion of the project, including the capital equipment, which is the only portion of the program being considered for private financing, also favors Government financing.

TABLE III.—NPV ANALYSIS

	Funds for ASRM (example)	
	Government direct financing (budget i=0 percent)	Private bank financing (i=10.0 percent current rate)
Life cycle (through GFY 2020):		
Then-year dollars (M)	28,423	28,582
NPV:		
d=9.10 percent (A-104, current)	6,196	6,212
d=10.0 percent (A-104, fall 1988)	5,526	5,534
d=11.0 percent (A-70, current)	4,899	4,897
Facility financing only:		
Then-year dollars (M)	527	686
NPV:		
d=9.1 percent (A-104, current)	405	421
d=10.0 percent (A-104, fall 1988)	395	403
d=11.0 percent (A-70, current)	385	383

"GFY" is government fiscal year. Where: "i" is interest rate; "d" is discount rate; NPV is net present value; and A-104 and A-70 are OMB circulars pertaining to lease/service agreements and loan guarantees, respectively.

However, perhaps equally important in comparing private financing to Government financing is the matter of the timing of the

Government's annual outlays under the two respective plans. Despite the fact that there is a four percent differential between Government financing and private sector financing in the NPV analysis, the fact that the private financing scheme permits the deferral of facilities costs to the later years becomes a significant benefit in light of the current budget pressures facing NASA.

Furthermore, the changing of certain assumptions underlying the plan might skew the analysis more in favor of private financing. For instance, if the contractor team had an equity investment in the facility or if there was a shared-use potential for the facility, the NPV analysis might recommend the privately financed proposal depending on the level of investment or shared use included in the proposal.

Based on the initial analysis performed by NASA on the NPV of Government outlays using private financing versus Government financing of the ASRM, NASA estimated that the NPV of outlays under private financing was substantially less than with Government financing. However, the Committee's review of this analysis showed that NASA had made an error and had used inconsistent interest rate and discount rate assumptions of 8.6 percent and 10 percent, respectively. Upon subsequent review, using current interest rates and discount rates of 10 percent and 9.1 percent, respectively, NASA determined that the NPV of private sector financing is higher than Government financing by approximately 4 percent—$421 million compared to $405—and the budget cost of the proposed private financing option in real year dollars at today's interest rate is estimated to be $686 million compared to the Government cost of $527 million.

However, even if the net cost to the Government is higher under the NPV assessment, the normal standard for such comparisons, the Committee there believes is another reason for the Committee to agree with this proposed financing scheme. As was stated in the Holling/Gore letter of March 10, the standard in this case is meeting an overriding national interest—i.e., the safety and reliability of the space shuttle—in a severely constrained budget. If the Committee were to instruct NASA to absorb the cost of the ASRM facility in its final allocation for FY 1990, it would damage the core NASA program and threaten ongoing engineering and test activities—two unacceptable results.

The Committee has agreed to provide contingent liability authority for this project in order to ensure the enhanced safety and reliability of the space shuttle. The Committee realizes that the proposed private sector financing scheme is not less costly in this case to the Government, but it expects that the deferred principal payment scheme and the proposed financing schedule can be more easily accommodated in outyear budgets than the facilities cost can be accommodated in the FY 1990 budget.

LEGISLATIVE HISTORY

On March 17, 1989, Senator Heflin introduced S. 663, the Advanced Solid Rocket Motor Contingent Liability Act. A companion measure, H.R. 2197, was introduced in the House by Congressman Sundquist.

The Subcommittee on Science, Technology, and Space held a hearing that dealt with this measure and other space transportation issues on May 11, 1989. A separate panel was convened at that hearing on discuss the safety and reliability of the proposed ASRM. This discussion was warranted as a result of concerns expressed in the Aerospace Safety Advisory Panel (ASAP) Annual Report of March 1989. The ASAP report recommended that "NASA reexamine the plan to procure the advanced solid rocket motor and study other options for the replacement of the current solid rocket motors."

The issues surfaced by the ASAP were addressed by the subcommittee, and the consensus was that there was adequate justification to proceed with the development of the ASRM since the proposed technical design and new manufacturing facility would increase the safety and reliability of the motor and the space shuttle.

On May 16, 1989, in open executive session and without objection, the Committee adopted S. 663 and ordered the bill reported.

SUMMARY OF MAJOR PROVISIONS

S. 663 provides that if, pursuant to section 207 of the National Aeronautics and Space Administration Authorization Act, Fiscal Year 1989 (Public Law 100-685), the NASA Administrator selects a proposal for an ASRM offering a privately financed production facility to be constructed on a Government site, NASA is authorized, notwithstanding any provision of law to the contrary, to provide for the payment for contingent liability in excess of available appropriations in the event the Government for its convenience terminates such contract, if any such contract limits the amount of the payments that the Federal Government is allowed to make under such contract to amounts to be provided in advance in appropriations Acts.

As noted above, this authority would provide the Administrator of NASA with the tools needed to sign a contract for a privately financed ASRM facility. The bill also would permit private financing of the capital equipment associated with that facility.

The total estimated cost of the facility and equipment is approximately $530 million. The estimated interest cost is $2-5 million in FY 1989 and $10-15 million in FY 1990.

ESTIMATED COSTS

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, May 31, 1989.

Hon. ERNEST F. HOLLINGS,
Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has reviewed S. 663, a bill to provide additional contingent termination

liability for the Advanced Solid Rocket Motor Program, as ordered reported by the Senate Committee on Commerce, Science, and Transportation, May 16, 1989.

This bill would provide an estimated $400 million of budget authority (contract authority) upon enactment, which is assumed to occur in August 1989. This estimate of budget authority is preliminary because the contract specifying the termination liability has not yet been signed. CBO expects that no outlays would result from the budget authority provided by the bill.

Bill purpose: S. 663 would authorize the Administrator of the National Aeronautics and Space Administration (NASA) to provide for the payment of termination liability in excess of appropriations for a new advanced solid rocket motor facility (ASRM) and its associated capital equipment in Yellow Creek, Mississippi. This liability would be paid only if the contract for development and construction of the ASRM facility is terminated by NASA for the convenience of the U.S. Government.

Enactment of this bill would enable the NASA Administrator to enter into a contract with a private contractor for the privately financed development of the ASRM facility, as was authorized by the 1989 NASA authorization (Public Law 100–685). CBO understands that NASA and the contractors are not willing to enter into this contract unless NASA has the authority to pay contingent termination liability. CBO believes, however, that NASA would complete this contract upon enactment of the bill. This bill would not provide appropriations for this project beyond contract authority for the termination liability.

Contingent termination liability: The contingent termination liability secures the contractor's investment in the project should the government choose to terminate the contract for its convenience.

Without S. 663, this transaction would be subject to the requirements of the Anti-Deficiency Act (31 U.S.C. 1341), which would require NASA to obligate sufficient funds to cover the federal government's maximum current liability. CBO believes that the intention of the bill, however, is to waive the Anti-Deficiency Act with regard to the ASRM contract. Thus, under S. 663, NASA would be authorized to incur this contingent liability without having funding for that liability specifically provided in advance. This authority is called indefinite contract authority and is counted as budget authority.

The amount of contingent liability incurred by the government at any time would be the amount required to pay off the outstanding loans at that time. Because NASA is still in the process of negotiating the contract, these amounts cannot be determined precisely at this time. Preliminary information provided by NASA indicates that the contingent liability would be roughly $200 million in fiscal year 1990, rising to $400 million in fiscal year 1992, and then dropping thereafter until eliminated in 1996. The amount of budget authority that we estimate would be provided by the bill—$400 million—represents the estimated maximum liability that the government would incur under S. 663.

We do not expect NASA to terminate this contract for the convenience of the government, and, if so, it would never need to pay termination liability. Thus, CBO estimates no outlays from the con-

tract authority provided in the bill. In the event that NASA chooses to terminate the contract, it would be able to make the payment from the indefinite contract authority that is available until needed.

Private financing arrangement: With this contingent liability authority, the Administrator would be able to sign a contract and secure private financing for development of the ASRM facility. The facility would be built and operated by a contractor selected by NASA; NASA would own the facility. Under the existing NASA authorization bill, the financing would be provided by a bank selected by the contractor and NASA. The repayments of the loan would be limited to amounts provided annually to NASA in appropriations acts.

By NASA's estimates, the government's cash disbursements in fiscal years 1989–1991 would be almost $300 million lower under the private financing plan than under normal Treasury financing, if, as anticipated, principal payments are deferred for three years. Nevertheless, on a discounted present value basis, the cost of the project to the government using private financing would be about 4 percent—or $16 million—higher than the cost of normal Treasury borrowing, because the interest rate would be higher.

Estimated cost to State and local governments: No costs would be incurred by state or local governments as a result of enactment of this bill.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Michael Sieverts.

Sincerely,

ROBERT D. REISCHAUER,
Director.

REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported.

The bill authorizes the Administrator of NASA to provide for the payment of contingent liability in excess of available appropriations in the event the Government for its convenience terminates a contract for a privately financed ASRM facility. The Committee believes that the proposed legislation does not subject individuals or businesses to any additional regulation or paperwork requirements. Further, this bill will have no impact on the privacy of individuals. With respect to economic impact, there would be a cost to the Federal Government in the event that the Government terminates the contract and becomes obligated, pursuant to the contingent liability authority in the reported bill, for the outstanding debt.

SECTION-BY-SECTION ANALYSIS

S. 663 provides that if, pursuant to section 207 of the National Aeronautics and Space Administration Authorization Act, Fiscal Year 1989 (Public Law 100–685), the NASA Administrator selects a proposal for an ASRM offering a privately financed production facility to be constructed on a Government site, NASA is authorized, notwithstanding any provision of law to the contrary, to provide for

the payment for contingent liability in excess of available appropriations in the event the Government for its convenience terminates such contract, if any such contract limits the amount of the payments that the Federal Government is allowed to make under such contract to amounts to be provided in advance in appropriations Acts.

As noted above, this authority would provide the Administrator of NASA with the tools needed to sign a contract for a privately financed ASRM facility. The bill also would permit private financing of the capital equipment associated with that facility.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the Committee states that the bill as reported would make no change to existing law.

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